

*THOONCHUS LONGISETOSUS* AND  
*OXYONCHUS STRIATUS*, NEW SPECIES OF  
FREE-LIVING MARINE NEMATODES  
(NEMATODA: ENOPLIDA) FROM  
NORTHWEST FLORIDA, U.S.A.

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*Abstract.*—Two new species of free-living marine nematodes from the genera *Thoonchus* and *Oxyonchus* (Nematoda: Enoplida) are described from sediments off the Gulf of Mexico and St. Andrew Bay, Bay County, Florida, U.S.A. *Thoonchus longisetosus* is unique in the presence of distinct labial setae rather than labial papillae, in the size and shape of the amphid, the position of the excretory pore, and in the shape of the gubernaculum. *Oxyonchus striatus* is unique in the presence of distinct transverse striations of the cuticle and in the size and shape of the spicules and gubernaculum. Keys are provided to the species of each genus.

The two new species described here were recovered from sediment in a bayou and lagoon off St. Andrew Bay, and from sediment adjacent to a rock outcrop in the Gulf of Mexico, Bay County, Florida.

Sediment samples were obtained from the bay sites with a 4.5 cm diameter corer to a depth of 10 cm in the sediment. Sediment samples were obtained from the Gulf of Mexico with SCUBA equipment, and a 3.5 cm diameter corer to a depth of 5–10 cm. Nematodes were extracted by repeated washing of the sediment in seawater, allowing the heavier particles to settle for 15 sec and decanting the supernatant water and suspended material to a second container. The suspended material from four washings was allowed to settle for 15–20 min, and the supernatant water was decanted. Nematodes were removed alive from the remaining sediment, fixed in hot alcohol-formalin-acetic acid for 24 h, cleared in glycerine, and mounted in anhydrous glycerine on Cobb slides.

Measurements were made with a calibrated ocular micrometer. All measurements are given in  $\mu\text{m}$  unless otherwise in-

dicated, and the mean is followed by the range in parentheses. The taxonomic hierarchy is that of Gerlach & Riemann (1974).

Enchelidiidae Filipjev, 1918

Thoonchinae Gerlach & Riemann, 1974

*Thoonchus* Cobb, 1920

*Thoonchus longisetosus*, new species

Figs. 1–5, 10, 11

*Diagnosis.*—One male from Gulf of Mexico. Body slender; cuticle thin, smooth. Head with circle of 6 long slender labial setae and single circle of 10 (6 + 4) cephalic setae, 4 submedian setae about  $\frac{2}{3}$  length of other 6. Cervical setae long, slender; present from immediately posterior to amphid to level of nerve ring. Somatic setae not observed; caudal setae present. Stoma large with heavily cuticularized walls and 3 teeth, right subventral tooth largest; size and position of left subventral and dorsal teeth about equal. About 6 complete irregular circles of small round denticles present anterior to dorsal and left subventral teeth. Amphid posterior to base of stoma; wide with thickened lateral margins. Excretory pore posterior to base of

stoma. Esophagus long, muscular; not expanded at junction with intestine. Tail conical, then cylindrical. Spinneret and caudal glands present; caudal gland cell bodies extend anterior to cloaca. Female unknown.

Male (n = 1): Length 2.62 mm, width at midbody 32. Head diameter 21 at level of cephalic setae. Labial setae 7 long, cephalic setae 12 and 8 long. Stoma 21 long, 19 wide at level of denticles. Amphid 18 wide. Esophagus 778 long; excretory pore 30 and nerve ring 202 from anterior end. Tail 86 long, 33 wide at cloaca. Two midventral areas of thickened cuticle 102 and 150 anterior to cloaca; each with central depression and small central sensilla. One pair small, subventral papillae present 78 anterior to cloaca. Single midventral, cuticular elevation with pore 22 anterior to cloaca. Two pairs subventral setae immediately anterior to cloaca. Spicules 35 long, arcuate with curved tip. Corpus of gubernaculum surrounding spicules; gubernacular apophysis 8 long, dorsally directed.  $a = 81.9$ ;  $b = 3.37$ ;  $c = 30.5$ .

*Type specimen.*—Holotype male, USNM 77137.

*Type locality.*—Sediments consisting of coarse sand, shell, and sponge spicules in Gulf of Mexico adjacent to exposed rock outcrop Bay County, Florida (30°12'45"N, 86°02'10"W).

*Etymology.*—The specific name is from the Latin *longus* for long and *seta* for bristle in reference to the long labial setae of this species.

*Remarks.*—The genus *Thoonchus* contains three species, *T. ferox* Cobb, 1920, *T. inermis* Gerlach, 1953, and *T. giganticus* Belogurova, Belogurov & Khamula, 1986. Cobb (1920) stated that *T. ferox* has labial papillae and the amphids are faint. He figured the amphids as small and located over the base of the stoma. Males of *T. ferox* have a single elevated precloacal supplementary organ and a pair of subventral papillae immediately anterior to the cloaca. Spicules are arcuate, the corpus of the gubernaculum

does not surround the spicules, and the gubernaculum has a thin proximal extension parallel to the spicules.

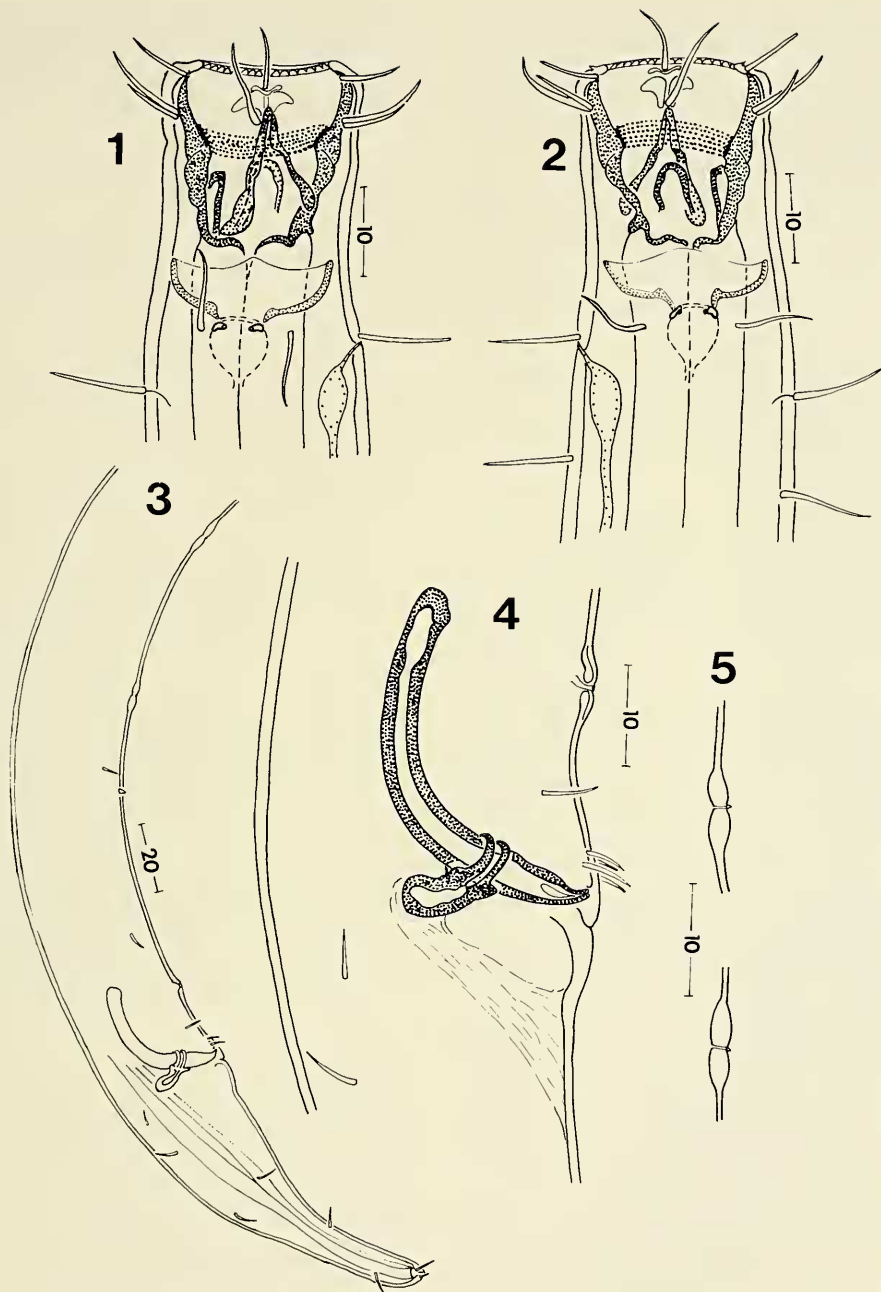
Chitwood (1960) described *T. ferox* as having labial papillae, an excretory pore anterior to the cephalic setae, and amphids located over the base of the stoma. Males have at least two subventral precloacal papilloid supplements and the spicules and gubernaculum are as described by Cobb (1920).

Gerlach (1953) described the male, and Gerlach (1954) described the female of *T. inermis*. *Thoonchus inermis* has labial papillae, the excretory pore is at the base of the stoma, amphids are located over the middle of the stoma, and the right subventral tooth is largest. Males do not have precloacal supplements or papillae and the gubernaculum has a pointed apophysis.

*Thoonchus longisetosus* can be distinguished from *T. ferox* by the presence of long labial setae rather than labial papillae, the amphid is posterior to the stoma and is large with thickened lateral margins rather than thin-walled and over the stoma, and the excretory pore is posterior to the stoma rather than anterior to the cephalic setae. The male genital apparatus of *T. longisetosus* differs from that of *T. ferox* in that the gubernaculum surrounds the spicules and the gubernaculum has a broad apophysis rather than a thin proximal extension parallel to the spicules.

*Thoonchus longisetosus* can be distinguished from *T. inermis* by the presence of long labial setae rather than papillae, the amphids are large and posterior to the stoma rather than over the middle of the stoma, and the excretory pore is posterior to the stoma rather than at the base of the stoma. The male genital apparatus of *T. longisetosus* differs from that of *T. inermis* in the presence of precloacal supplements and papillae, in the presence of a gubernaculum that surrounds the spicules, and the gubernaculum has a broad blunt apophysis rather than a pointed apophysis.

The three species of *Thoonchus* discussed



Figs. 1-5. *Thoonchus longisetosus*: 1, Male, head, right lateral view; 2, Male, head, left lateral view; 3, Male, posterior end, right lateral view; 4, Male, right spicule and gubernaculum, lateral view; 5, Male, precloacal supplements, right lateral view (anterior, top; posterior, bottom). Scales in  $\mu\text{m}$ .

above are quite similar in the presence of the oncholaimoid structure of the stoma. The stoma is 1.1–1.5 times as long as broad and the teeth are short, broad, and originate from a wide base at the posterior end of the stoma. The spicules are short and arcuate. The gubernaculum has an expanded corpus and an apophysis. Cobb (1920) and Chitwood (1960) emphasized the oncholaimoid shape of the stoma as characteristic of the genus *Thoonchus*. Wieser (1953) stated in reference to the genera of Thoonchinae (*Thoonchus* and *Ditlevsenella* Filipjev, 1925) “buccal cavity oncholaimoid i.e. the two subventral teeth strongly developed and with a broad base.”

Belogurova et al. (1986) described a male nematode from the Tatar Strait as *Thoonchus giganticus*. They placed this species in *Thoonchus* based on the presence of three teeth in the stoma and the absence of supplements in the male. Examination of the drawings of *T. giganticus* reveals that the shape of the stoma and teeth differ significantly from the oncholaimoid type of stoma and teeth of the other species in the genus. The stoma is long and narrow (2.5 times as long as broad). The subventral teeth are figured as almost equal, narrow, and extend from a narrow base at the posterior end of the stoma to almost the anterior end of the stoma. The dorsal tooth is smaller and slightly posterior to the anterior terminus of the subventrals. The spicules of *T. giganticus* are elongate (chord = 558; arc = 360) and thin. The gubernaculum is a thin plate without apophysis or extension. The preloacal organs are papilloid.

The shape of the stoma, teeth, and male genital apparatus deviate significantly from that of *Thoonchus*. The shape of these parts are more similar to those of certain genera in the Enchelidiinae rather than Thoonchinae. Based on the information available, it is not prudent to emend the genus *Thoonchus* to include this species. It is also difficult to place this species within the existing genera in the Enchelidiinae or

erect a new genus for it. Therefore, *Thoonchus giganticus* Belogurova, Belogurov, & Khamula, 1986, is considered of doubtful generic assignment.

The following key differentiates the three species of *Thoonchus*.

- 1. Labial sensillae papilliform; amphid over stoma; excretory pore at level of base of stoma or anterior to cephalic setae ..... 2
- Labial sensillae setiform; amphid posterior to stoma; excretory pore posterior to stoma ..... *T. longisetosus* n. sp.
- 2(1). Excretory pore anterior to cephalic setae; male gubernaculum with thin proximal extension parallel to spicules; preloacal supplements and papillae present ..... *T. ferox* Cobb, 1920
- Excretory pore at base of stoma; male gubernaculum with pointed apophysis; preloacal supplements and papillae absent ..... *T. inermis* Gerlach, 1953

Enoplidae Dujardin, 1845  
 Oxyonchinae De Coninck, 1965  
*Oxyonchus* Filipjev, 1927  
*Oxyonchus striatus*, new species  
 Figs. 6–10, 13, 14

*Diagnosis*.—One male, one female, and one juvenile. Body long, slender. Cuticle thick with distinct transverse striations beginning at base of head and extending length of body. Head with 3 low lips, 6 labial setae, and single circle of 10 (6 + 4) cephalic setae; 4 submedian setae about 45% length of other 6 in male, 36% of other 6 in female. Cephalic organ not observed. Cephalic capsule thin, distinctly light refractive. Cervical setae of variable length, numerous to level of nerve ring; longest setae in dorsal, ventral, and lateral rows. Somatic setae short, sparse; caudal setae variable in length, numerous. Stoma with 2 large subventral teeth, left

subventral longer, reaching just anterior to anterior margin of mandibles; dorsal tooth not observed. Mandibles complex, well-developed; each with two thick arched rods converging medially. Each rod with small tooth (denticle) at base of transverse bar. Rods connected by broad transverse bar with claws. A series of refractile rods or tubules extending radially from oral surface of each mandible, terminating at about posterior margin of transverse bar. Amphid near base of head, oblong with thickened anterior margin. Esophagus vesiculate-crenulate; excretory pore not observed. Tail cylindrical for first two-thirds, then narrower; tip slightly expanded. Caudal glands and spinneret present.

Male ( $n = 1$ ): Length 3.41 mm, width at midbody 43. Head 38 long, 34 wide at level of cephalic setae. Labial setae 6 long; cephalic setae 33 and 15 long. Amphid 7 wide. Subventral teeth 26 and 23 long. Esophagus 590 long; nerve ring 135 from anterior end. Tail 115 long, 40 wide at cloaca. Single, midventral, tubular supplement 22 long, located 74 anterior to cloaca. One pair subventral, papillae 61 posterior to cloaca. Spicules 140 long, capitulum funnel-shaped then narrowed, then expanded and gradually narrowed to flattened tip. Gubernaculum bipartite, each lateral piece a narrow tube 28 long, apophysis absent.  $a = 79.3$ ;  $b = 5.78$ ;  $c = 29.7$ .

Female ( $n = 1$ ): Length 4.44 mm, width 54 at midbody. Head 37 long, 37 wide at level of cephalic setae. Cephalic setae 30 and 11 long. Amphid 7 wide. Subventral teeth 30 and 28 long. Esophagus 683 long; nerve ring 150 from anterior end. Tail 112 long, 45 wide at anus. Reproductive system didelphic, amphidelphic, ovaries reflexed. Vulva 2.74 mm from anterior end. Two eggs present, 120 and 144 long.  $a = 82.2$ ;  $b = 6.50$ ;  $c = 39.6$ ;  $V = 62\%$ .

*Type specimens.*—Holotype male, USNM 77134; allotype female, USNM 77135; paratype juvenile, USNM 77136.

*Type locality.*—Holotype male from non-

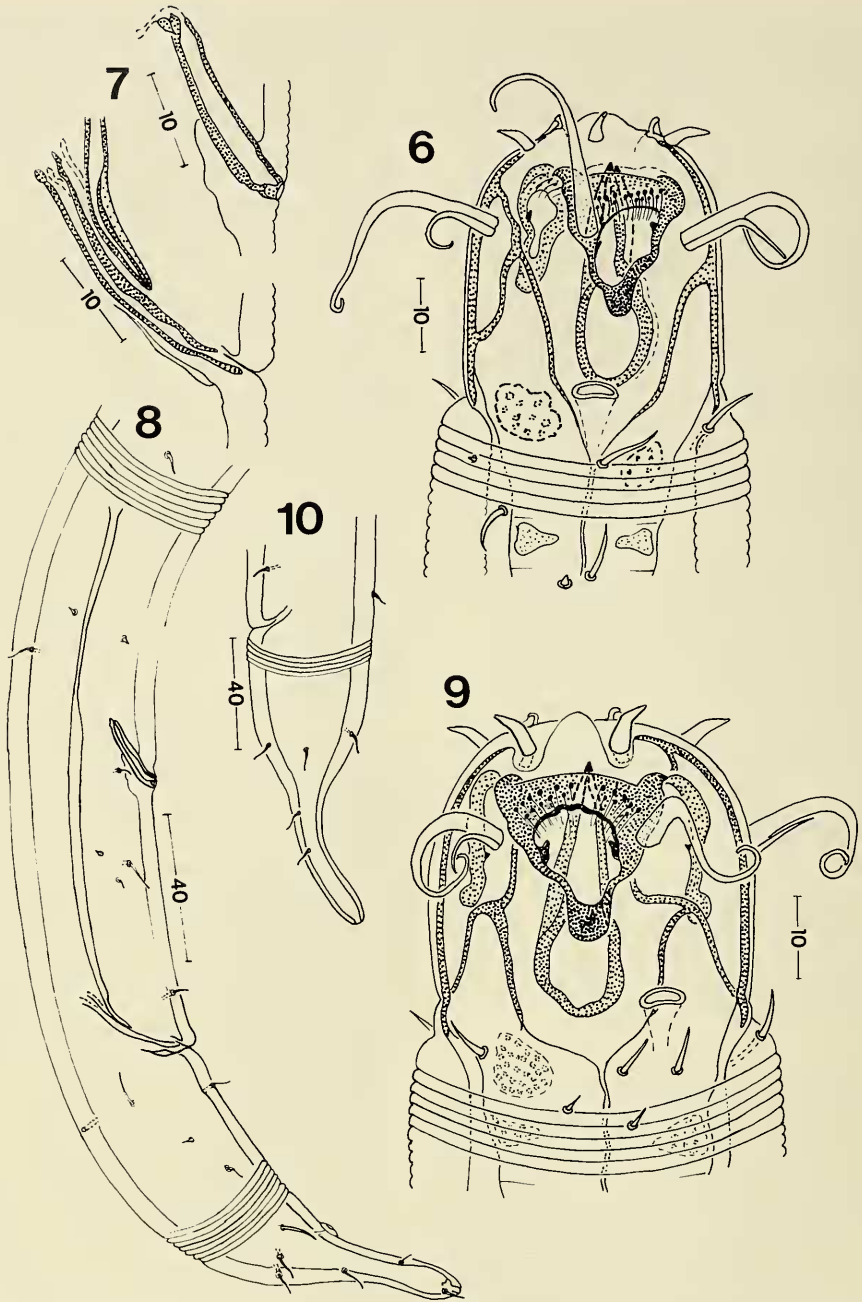
vegetated sediment consisting of fine sand and detritus from mouth of Freshwater Bayou off St. Andrew Bay, Bay County, Florida (85°39'00"W, 30°07'30"N). Allotype female from nonvegetated sediment consisting of fine sand and detritus from Grand Lagoon off St. Andrew Bay, Bay County, Florida (85°43'15"W, 30°07'50"N).

*Etymology.*—From the Latin *stria* for furrow in reference to the transverse striations in the cuticle of this species.

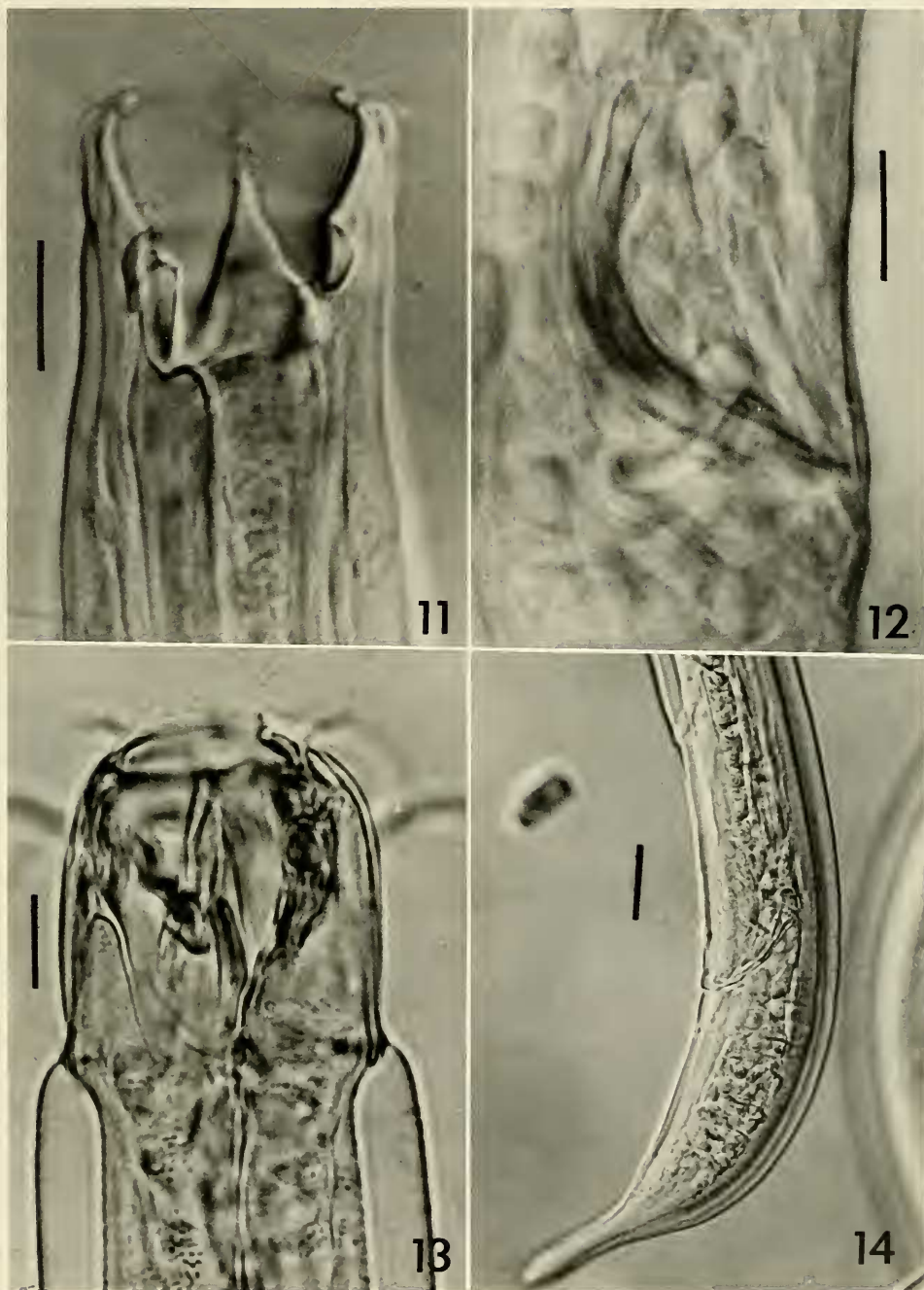
*Remarks.*—The genus *Oxyonchus* is characterized by the presence of two large subventral teeth in the stoma that extend to the anterior end of the mandibles. The dorsal tooth is reduced or absent. Mandibles are arch-shaped, well developed, and denticles can be present on the inner surface of the mandibular plate. Until now all species for which males are known have arcuate, relatively short spicules (1–1.9 cloacal diameters).

De Coninck & Stekhoven (1933) provided a key to the species of *Oxyonchus* and considered *O. stateni* Allgen, 1930 as insufficiently characterized and possibly a synonym of *O. australis* (De Man, 1904) Filipjev, 1927. Wieser (1953) revised the genus *Oxyonchus* and provided a key to the species. He considered *O. stateni* a synonym of *O. australis*. Species added to the genus *Oxyonchus* since 1953 are: *O. subantarcticus* Mawson, 1958; *O. culcitatus* Wieser, 1959; and *O. ditlevseni* Inglis, 1964.

Allgen (1959) described five new species of *Oxyonchus*; *O. brachysetosus*, *O. crassicolis*, *O. macrodon*, *O. notodentatus*, and *O. parastateni*. He disagreed with the position of Wieser (1953) regarding the synonymy of *O. stateni* and *O. australis* but did not provide additional figures or information to support the validity of *O. stateni*. The description, figures, and absence of figures for the new species of *Oxyonchus* provided by Allgen (1959) are insufficiently adequate to distinguish the species from others and to place these species in a key. Therefore, *O. brachysetosus*, *O. crassicolis*, *O. macrodon*,



Figs. 6-10. *Oxyonchus striatus*: 6, Male, head, left lateral view; 7, Male, precloacal supplement and gubernaculum, right lateral view; 8, Male, posterior end, right lateral view; 9, Female, head, left sublateral view; 10, Female tail, lateral view. Scales in  $\mu\text{m}$ .



Figs. 11-14. Figs. 11-12. *Thoonchus longisetosus*: 11, Male, head, lateral view; 12, Male posterior end, lateral view; Scale bars = 10  $\mu$ m. Figs. 13-14. *Oxyonchus striatus*: 13, Male, head, lateral view; Scale bar = 10  $\mu$ m; 14, Male, posterior end, lateral view; Scale bar = 20  $\mu$ m.

*O. notodontatus*, and *O. parastateni* are considered *species dubia*.

*Oxyonchus striatus*, n. sp. differs from all other species of the genus in the presence of the distinctly striated cuticle, the length and shape of the spicules, and the shape of the gubernaculum.

The following key to the species of *Oxyonchus* is to a great extent based on the key developed by Wieser (1953). Wieser (1953) stated in the introductory remarks to his key that "as to the species described there are some problems which can not be cleared up from the records in the literature." The statement remains applicable, and some of the species included in the genus do not appear to belong in *Oxyonchus*. An examination of the type specimens for each species would be required in order to complete a thorough analysis of the genus.

Key to Species of *Oxyonchus*  
Filipjev, 1927

- 1. Cuticle with transverse striations; spicules long, slender, not arcuate, 3.5 cloacal diameters long; gubernaculum without apophysis . . . . . *O. striatus*, n. sp.
- Cuticle without transverse striations; spicules arcuate, broad, 1-1.9 cloacal diameters long; gubernaculum with or without apophysis . . . . . 2
- 2(1). Tail 9-10 cloacal diameters long . . . . . *O. dubius* (Filipjev, 1918)  
De Coninck & Stekhoven, 1933
- Tail 7 cloacal diameters long or less . . . . . 3
- 3(2). Longer cephalic setae 0.8 head diameter or less in length . . . . 4
- Longer cephalic setae 1 head diameter or more in length . . . . 8
- 4(3). Precloacal supplement absent in male . . . . . 5
- Precloacal supplement present in male . . . . . 6
- 5(4). Tail 7 cloacal diameters long; spicules 1.9 cloacal diameters long; gubernaculum with apophysis . . . . .
- ... *O. problematicus* Filipjev, 1946
- Tail 4.2 cloacal diameters long; spicules 1 cloacal diameter long; gubernaculum without apophysis . . . . . *O. pachylabiatus*  
Stekhoven, 1946
- 6(4). Mandibles each with 14-15 denticles; cephalic capsule 45-50  $\mu$ m long . . . . . *O. acantholaimus*  
(Saveljev, 1912) Filipjev, 1927
- Mandibles with about 6 denticles; cephalic capsule less than 45  $\mu$ m long . . . . . 7
- 7(6). Spicules 1.5 cloacal diameters in length . . . . .
- ... *O. hamatus* (Steiner, 1916)  
Filipjev, 1927
- Spicules 1.0 cloacal diameter in length . . . . .
- ... *O. australis* (De Man, 1904)  
Filipjev, 1927
- 8(3). Tail 4-4.25 anal diameters in length . . . . . 9
- Tail 5-6 anal diameters in length . . . . . 11
- 9(8). Longer cephalic setae 2.7 head diameters in length . . . . .
- ... *O. culcitatus* Wieser, 1959
- Longer cephalic setae about 1.0 head diameter in length . . . . . 10
- 10(9). Mandibles each with 15-20 denticles; male precloacal supplement 2-2.5 cloacal diameters from cloaca . . . . .
- ... *O. dentatus* (Ditlevsen, 1918)  
Filipjev, 1947
- Mandibles each with about 4 denticles; male precloacal supplement 3.8-4.2 cloacal diameters from cloaca . . . . .
- ... *O. polaris* Filipjev, 1927
- 11(8). Precloacal supplement about 2.2 cloacal diameters from cloaca; gubernacular apophysis direct-



ed caudally .....  
 ..... *O. ditlevseni* Inglis, 1964  
 — Precloacal supplement about 3.7  
 cloacal diameters from cloaca;  
 gubernacular apophysis direct-  
 ed dorsally .....  
 .. *O. subantarcticus* Mawson, 1958

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